

WHAT IS CLAIMED IS:

- 1 1. A method for protecting a redistribution layer on a wafer, wherein the wafer provided
2 with the redistribution layer is covered on its entire surface with an organic protective layer,
3 which protects the redistribution layer from corrosion and oxidation in that it produces a dense
4 covering of the metal surface of the redistribution layer through chemical bonding.
- 1 2. The method as claimed in claim 1 wherein the redistribution layer comprises a seed layer,
2 a layer of copper situated on said seed layer, a nickel layer arranged thereon, and a gold layer
3 covering the latter.
- 1 3. The method as claimed in claim 1, wherein BTA (benzotriazole) is used as the organic
2 protective layer.
- 1 4. The method as claimed in claim 1, wherein Gliccoat® is used as the organic protective
2 layer.
- 1 5. The method as claimed in claim 1, wherein Preventol® is used as the organic protective
2 layer.
- 1 6. The method as claimed in claim 1, wherein the organic protective layer is applied by
2 spraying.
- 1 7. The method as claimed in claim 1, wherein the organic protective layer is applied by
2 dipping the wafer into a liquid reservoir.

1 8. The method as claimed in claim 7, wherein the temperature of the liquid reservoir is at
2 about 30° C.

1 9. The method as claimed in claim 1, wherein the wafer is etched prior to the coating with
2 the organic protective layer.

1 10. The method as claimed in claim 1, wherein the coating of the wafer is repeated after the
2 wafer has been mounted on a carrier.

- 1 11. A method for manufacturing a semiconductor device, the method comprising:
2 providing a semiconductor device that includes a conductive area at an upper surface;
3 forming a redistribution layer on the semiconductor device, the redistribution layer
4 electrically coupling the conductive area to a connection region;
5 coating the redistribution layer with an organic protective layer.
- 1 12. The method of claim 11 wherein the organic protective layer protects the redistribution
2 layer from corrosion and oxidation in that it produces a dense covering of the metal surface of
3 the redistribution layer through chemical bonding.
- 1 13. The method of claim 11 wherein the organic protective layer coats sidewalls of the
2 redistribution layer.
- 1 14. The method of claim 11 wherein forming a redistribution layer comprises:
2 forming a seed layer over the upper surface of the semiconductor device;
3 patterning the seed layer in a redistribution layer pattern; and
4 forming a copper layer over the seed layer.
- 1 15. The method of claim 14 and further comprising forming a nickel layer over the copper
2 layer and forming a gold layer over the nickel layer.
- 1 16. The method of claim 11 wherein coating the redistribution layer comprises applying the
2 organic protective layer by spraying.
- 1 17. The method of claim 11 wherein coating the redistribution layer comprises dipping the
2 wafer into a liquid reservoir.

1 18. The method of claim 11 wherein the semiconductor device is etched immediately prior to
2 the coating with the organic protective layer.

1 19. The method of claim 11 wherein the coating of the wafer is renewed after the latter has
2 been mounted on a carrier.

1 20. A semiconductor device comprising:
2 a semiconductor substrate including a conductive pad disposed at an upper surface
3 thereof;
4 a 3D structure disposed over the upper surface of the semiconductor substrate;
5 a redistribution layer routed between the semiconductor substrate and an upper portion of
6 the 3D structure; and
7 an organic protective layer overlying at least sidewall portions of the redistribution layer,
8 the organic protective layer exposing at least the upper portion of the 3D structure.

1 21. The device of claim 20 wherein the organic protective layer overlies the entire
2 redistribution layer except at the upper portion of the 3D structure.

1 22. The device of claim 20 wherein the redistribution layer comprises copper.

1 23. The device of claim 22 wherein the redistribution layer comprises:
2 a seed layer;
3 a copper layer overlying the seed layer;
4 a nickel layer overlying the copper layer; and
5 a gold layer overlying the nickel layer.

1 24. The device of claim 23 wherein the gold layer overlies the upper portion of the 3D
2 structure but not portions of the nickel layer adjacent the upper portion of the 3D structure.

1 25. The device of claim 20 wherein the organic protective layer comprises BTA
2 (benzotriazole).

1 26. The device of claim 20 wherein the organic protective layer protects the redistribution
2 layer from corrosion and oxidation in that it produces a dense covering of the metal surface of
3 the redistribution layer through chemical bonding.